

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

(43) International Publication Date
12 September 2003 (12.09.2003)

PCT

(10) International Publication Number
WO 03/075541 A1

(51) International Patent Classification⁷: **H04L 29/06,**
G05B 19/418, H04L 12/26

PAPADOPOULOS, Dean; 11 Rocks Run, Gorton, MA 01450 (US). **SWALES, Andrew**; 10 Woodvue Road, Windham, MA 03087 (US). **METCALF, Orlando, P., III**; 475 Wood Lane, North Andover, MA 01845 (US).

(21) International Application Number: **PCT/US03/05942**

(22) International Filing Date: 24 February 2003 (24.02.2003)

(74) Agent: **GOLDEN, Larry, L.**; Square D Company, 1415 S. Roselle Road, Palatine, IL 60067 (US).

(25) Filing Language: English

(26) Publication Language: English

(84) Designated States (regional): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR).

(30) Priority Data:

10/087,888

2 March 2002 (02.03.2002) US

Published:

— with international search report

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(71) Applicant: **SCHNEIDER AUTOMATION INC.**
[US/US]; One High Street, North Andover, MA 01845 (US).

(72) Inventors: **NAISMITH, Ronald**; 42 Hickleberry Lane, North Andover, MA 01845 (US). **TANZMAN, Allen**; 37 Wessex Road, Newton Centre, MA 02459 (US).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **INPUT/OUTPUT (I/O) SCANNER FOR A CONTROL SYSTEM WITH PEER DETERMINATION**

(57) Abstract: A method and apparatus for providing an active standby control system comprising the steps of providing a first and second programmable logic controller (PLC), each controller having an operating state. Each controller further including a network module board operably connected to a network; a control unit, a remote I/O head; and, a hot standby module, each hot standby module is operably connected together. Operably connecting each programmable logic controller to a network. Assigning a network address identifier, i.e., Internet Protocol or Media Access Control address, to each programmable logic controller and sensing the operating state of each programmable logic controller. The network address identifier of each programmable logic controller is determined by the operating state of each respective programmable logic controller. The present invention is also directed to an apparatus for communication with at least one device which resides on a standard communications network using a standard communications protocol. The apparatus has a scanner for scanning the device, a device scan table for storing data relating to the device, and a standard communications interface for interfacing between the device scanner and the standard communications network using the standard communication protocol. The present invention is also directed to a device scanner for a first device located on a first node of a standard communications network. The device scanner is provided for scanning devices on the standard communications network, and for identifying a second device on a second node of the standard communications network. The device scanner has an initiator for initiating a first communications command in a peer protocol format to the second node, a receptor for receiving from the second node a second communications command in the peer protocol format, in response to the first communications command, and an identifier for identifying the second device on the second node as a peer device. This apparatus and device can be used within a control system for monitoring input devices and for controlling output devices which reside on the standard communications network. The standard communications network can be an Ethernet network, and the standard communications protocol used therein can TCP using Modbus.

WO 03/075541 A1

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/05942

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0041377	A	13-07-2000	US 6327511 B1 CA 2320254 A1 EP 1060604 A1 WO 0041377 A1	04-12-2001 13-07-2000 20-12-2000 13-07-2000
US 5245704	A	14-09-1993	NONE	

INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/US 03/05942

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L29/06 G05B19/418 H04L12/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L G05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 41377 A (SCHNEIDER AUTOMATION INC) 13 July 2000 (2000-07-13) the whole document	1-38
X	US 5 245 704 A (WEBER MARK S ET AL) 14 September 1993 (1993-09-14) column 4, line 27 - line 46 column 13, line 63 - column 14, line 56; claims 6-8	1-3, 5-7, 15-17, 19-38

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

8 August 2003

Date of mailing of the international search report

21/08/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5816 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Paven, A